

Claims

- [c1] A screen reader software product comprising: a reader module communicatively coupled with resident software on a computer, the reader module adapted to collect textual and non-textual display information generated by the resident software; a broadcast module communicatively coupled to the reader module, the broadcast module adapted to communicate the display information collected by the reader module to an output device; a schema module communicatively coupled to the broadcast module, the schema module adapted to send non-textual display information with associated textual display information to the output device in substantially concurrent fashion.
- [c2] The software product of claim 1 wherein the output device is a speech synthesizer.
- [c3] The software product of claim 2 wherein the non-textual display information is selected from the group consisting of font format, paragraph format, bulleting, numbering, borders, shading, column format, page breaks, section breaks, tab settings, table structure, image data, case settings, comment field locations, hyperlink settings, data entry forms, and graphic user interface configuration.
- [c4] The software product of claim 2 wherein the schema module modifies the broadcast of the textual display information to communicate the non-textual display information by altering characteristics of the speech synthesizer, the characteristics selected from the group consisting of pitch, speed, volume, emphasis, simulated gender, simulated accent, simulated age, and pronunciation.

- [c5] The software product of claim 2 wherein the schema module includes an additional audio output layer to the broadcast of the textual display information to audibly communicate the non-textual display information in substantially concurrent fashion with the synthesized text.
- [c6] The software product of claim 5 wherein the additional audio output layer broadcasts a pre-selected sound associated with the non-textual display information.
- [c7] The software product of claim 5 wherein the pre-selected sound is end-user-definable.
- [c8] The software product of claim 6 wherein pre-selected sound is selected from the group consisting of dynamically generated sound and prerecorded digital audio.
- [c9] The software product of claim 2 wherein the schema module includes a plurality of additional audio outputs layer to the broadcast of the textual display information to audibly communicate a corresponding plurality of non-textual display information in substantially concurrent fashion with the synthesized text.
- [c10] The software product of claim 1 wherein the output device is a Braille display.
- [c11] The software product of claim 10 wherein the non-textual display information is selected from the group consisting of font format, paragraph format, bulleting, numbering, borders, shading, column format, page breaks, section breaks, tab settings, table structure, image data, case settings, comment field locations, hyperlink settings, data entry forms, and graphic user interface configuration.

- [c12] The software product of claim 11 wherein the schema module modifies the broadcast of the textual display information to communicate the non-textual display information by altering tactile characteristics of the Braille display.
- [c13] The software product of claim 12 wherein the tactile characteristics of the Braille displayed modified by the schema module are selected from the group consisting of display speed, pin protrusion level, pin retraction level and pin vibration.
- [c14] The software product of claim 1 wherein the output device is an array of two Braille displays, a first Braille display outputs textual display information and a second Braille display outputs non-textual display information in substantially concurrent fashion.
- [c15] The software product of claim 1 wherein the output device is an array of a speech synthesizer and a Braille display, the speech synthesizer audibly broadcasts textual display information and the Braille display tactically outputs non-textual display information in substantially concurrent fashion.
- [c16] The software product of claim 1 wherein the output device is an array of a speech synthesizer and a vibratory apparatus, the speech synthesizer audibly broadcasts textual display information and the vibratory apparatus vibrates at pre-selected frequencies responsive to non-textual display information in substantially concurrent fashion.
- [c17] A screen reader software product comprising: a reader module communicatively coupled with resident software on a personal computer, the reader module adapted to collect textual and non-textual display information generated by the resident software, the non-textual display

information is selected from the group consisting of font format, paragraph format, bulleting, numbering, borders, shading, column format, page breaks, section breaks, tab settings, table structure, image data, case settings, comment field locations, hyperlink settings, data entry forms, and graphic user interface configuration.; a broadcast module communicatively coupled to the reader module, the broadcast module adapted to communicate the display information collected by the reader module to speech synthesizer; an end-user-definable schema module communicatively coupled to the broadcast module, the schema module adapted to send non-textual display information with associated textual display information to the output device in substantially concurrent fashion whereby the schema module modifies the broadcast of the textual display information to communicate the non-textual display information by altering characteristics of the speech synthesizer, the characteristics selected from the group consisting of pitch, speed, volume, emphasis, simulated gender, simulated accent, simulated age, and pronunciation.

- [c18] A screen reader software product comprising: a reader module communicatively coupled with resident software on a personal computer, the reader module adapted to collect textual and non-textual display information generated by the resident software, the non-textual display information is selected from the group consisting of font format, paragraph format, bulleting, numbering, borders, shading, column format, page breaks, section breaks, tab settings, table structure, image data, case settings, comment field locations, hyperlink settings, data entry forms, and graphic user interface configuration.; a broadcast module communicatively coupled to the reader module, the broadcast module adapted to communicate the display information collected by the reader

module to speech synthesizer; an end-user-definable schema module communicatively coupled to the broadcast module, the schema module adapted to send non-textual display information with associated textual display information to the output device in substantially concurrent fashion whereby the schema module includes an additional audio output layer to the broadcast of the textual display information to audibly communicate the non-textual display information as an end-user-definable a pre-selected sound selected from the group consisting of dynamically generated sound and prerecorded digital audio in substantially concurrent fashion with the synthesized text.

- [c19] A screen reader software product comprising: a reader module communicatively coupled with resident software on a computer, the reader module adapted to collect textual and non-textual display information generated by the resident software; a broadcast module communicatively coupled to the reader module, the broadcast module adapted to communicate the display information collected by the reader module to an output device; an end-user-definable schema module communicatively coupled to the broadcast module, the schema module adapted to send non-textual display information with associated textual display information to the output device in substantially concurrent fashion.
- [c20] The software product of claim 19 wherein a plurality end-user schema definitions are assignable to specific resident software applications.
- [c21] The software product of claim 19 wherein end-user schema definitions generated by an end user are shareable with other users.